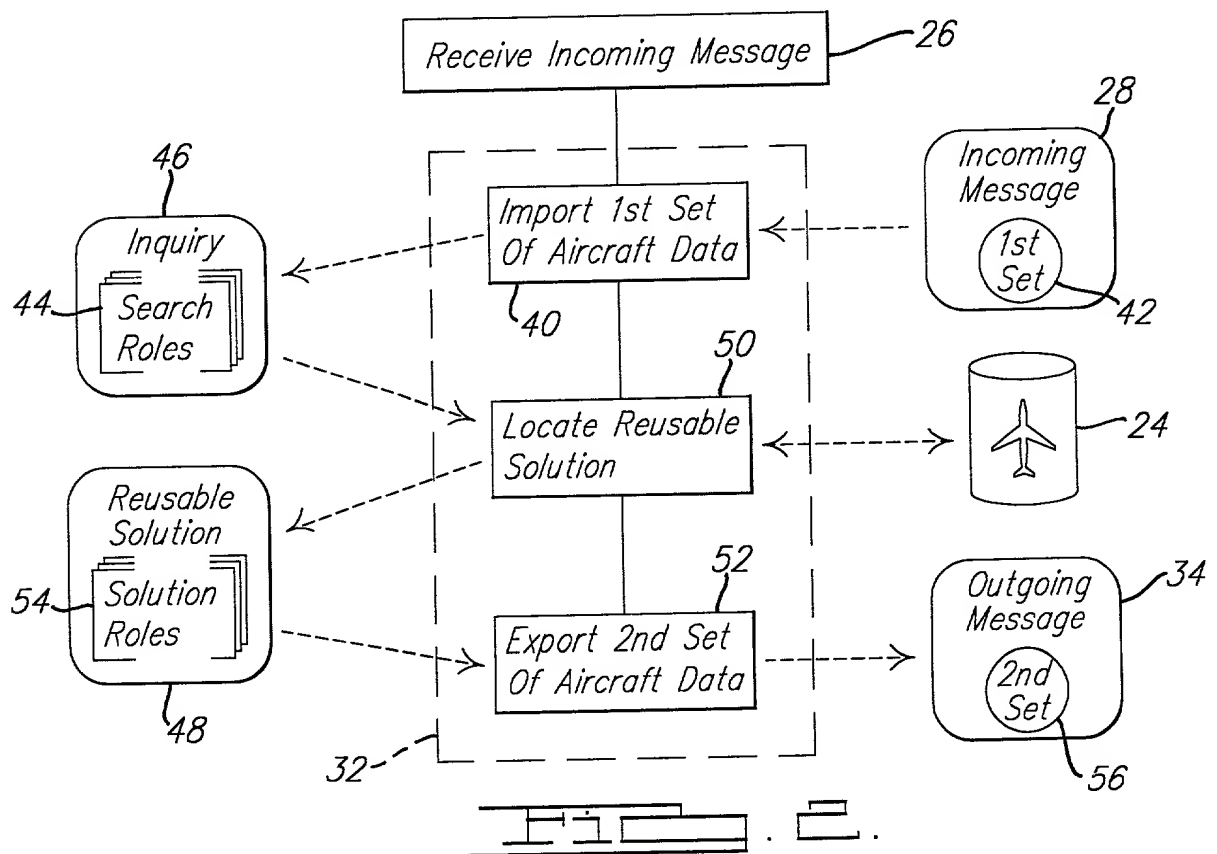
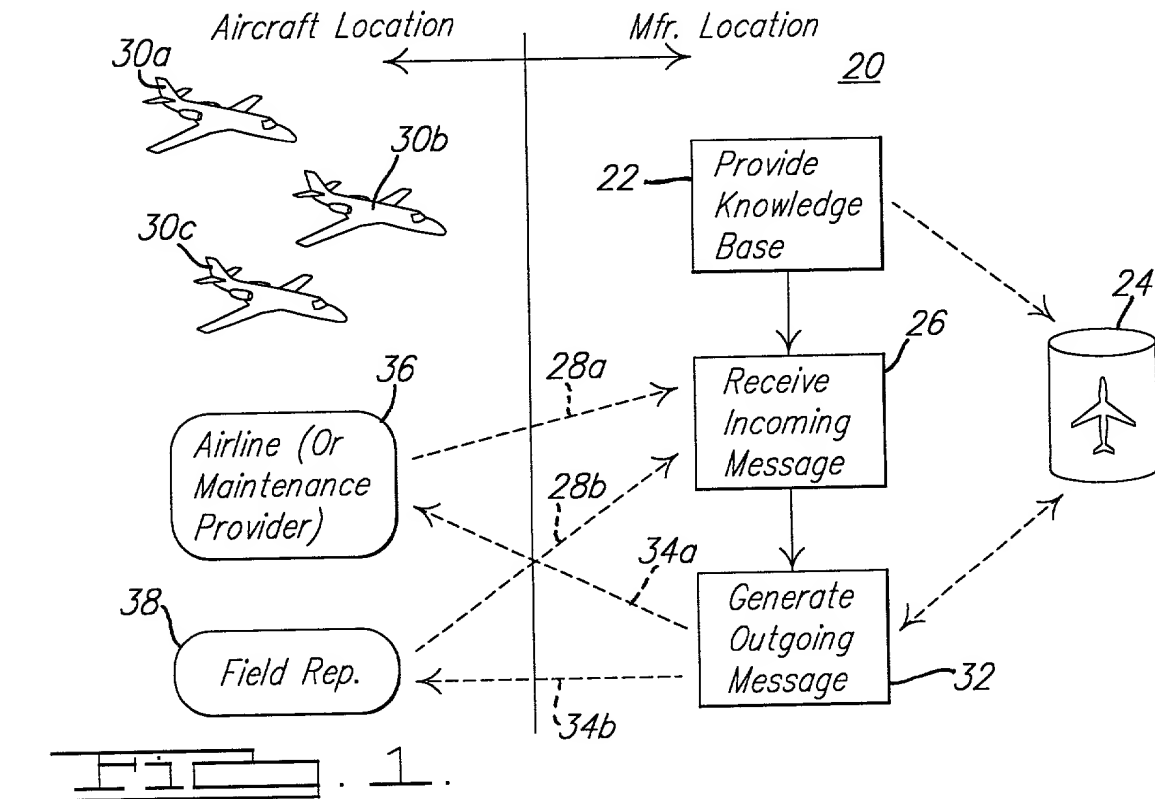


1/21



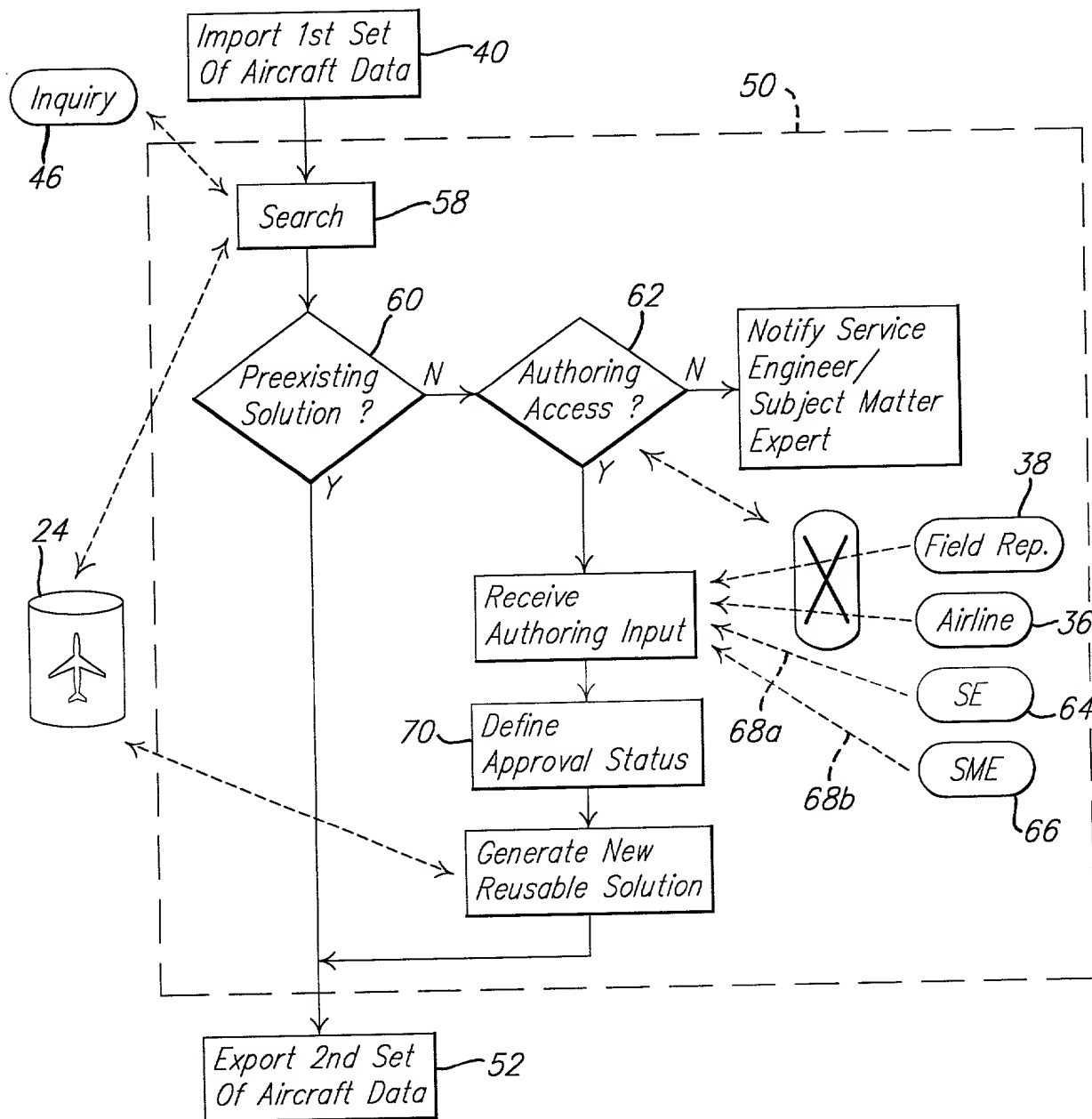
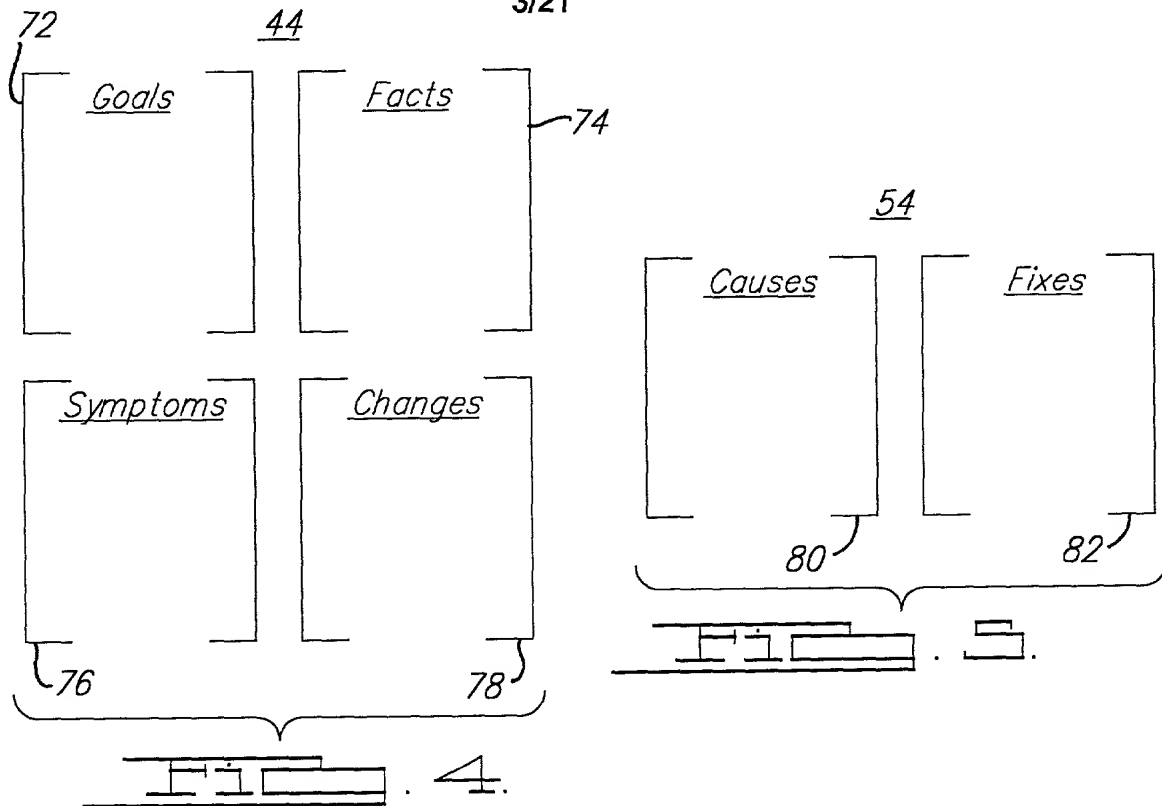


FIG. 3.

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Reusable Solutions

How To Use The Tool ⇒

Tool Kit ⇒

Primus Info ⇒

Training Schedule ⇒

Integration With BOECOM ⇒

Top Ten Questions ⇒

Structures Issues ⇒

Project Overview ⇒

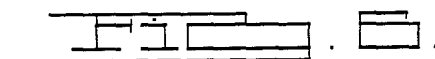
Go To Production Tool ⇒

Not another Boecom search... Try a Reusable Solution!

Take A Guest Tour

6,143 solutions available
 1,320 approved for SE status
 312 approved for Boeing/Customer

Goal



4/21

This Tour gives you Read Access To The Production Data through a Guest account. Training is needed in order to effectively use the tool, but we are comfortable enough with the tool's intuitive nature and want you to see it first hand. The success of your search is subject to the limited amount of data currently in the tool. Contact Us if you have any questions.

User Name: Guest

Password: boeing (lower case)

Domain: bcsr@bxsr (menu)

Place a significant amount of information in one or all Search Fields and select Search in upper left corner. Appropriately, Use the New Session and Logout buttons on the left.

to Service Engineering Tool ← 88

to Field Service & Customer Tool ← 86

FIG. 7.

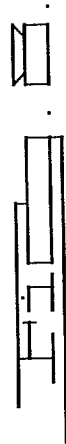
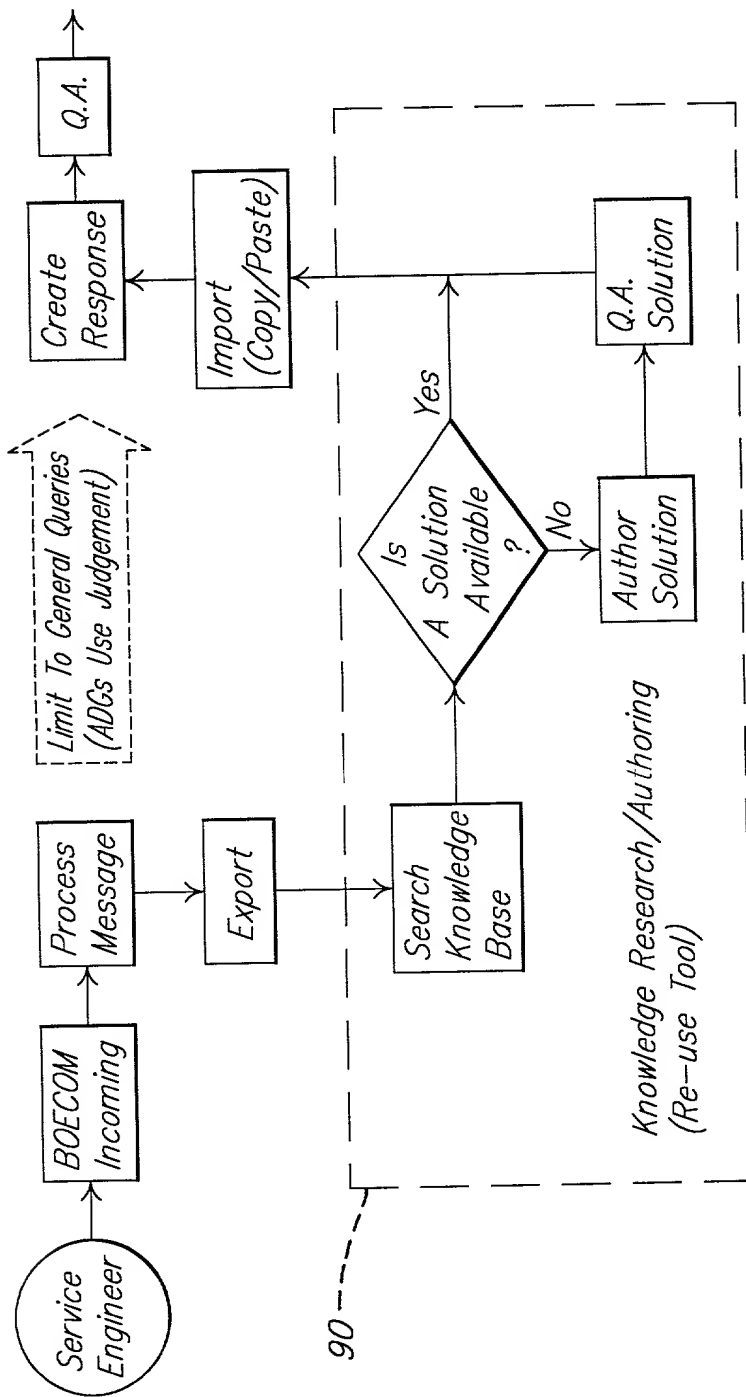








FIG. 1 3304660

PRIMUS		
 <i>Goal</i>	 <i>Change</i>	<i>STEPS TO CREATING A SOLN.</i>
 <i>Fact</i>	 <i>The Root Cause as the Key To Solutions</i>	
	 <i>Fix</i>	
 <i>Symptom</i>		<i>Properties – Status</i>
	<i>A Great Sample Solution</i>	<i>Things you don't need to say!</i>
	<i>HTML Syntax used to link to files/solutions.</i>	

1066097-23344550

Goal

A Goal statement is a clear statement of your customers' objectives—what the customer is trying to do or the question. Good Goals help the troubleshooting process. A Goal statement also serves as the solution's title. ALL SOLUTIONS MUST CONTAIN AT LEAST ONE GOAL

Examples of Good Goal Statements

Goal: How to repair a 3-inch longitudinal crack on the P&W 4000 engine nose cowling?

Goal: What are the operational restrictions to be followed for a "Gear down" dispatch?

Goal: Resolution of electrical power loss condition.

Fact

Fact statements should be formal and detailed, including as much information as necessary to uniquely identify the product being described, such as : model, ATA, part number. Fact statements may also be clarifying statements that are 'constant'.

Examples of Good Fact Statements

Fact: Model 747-400

Fact: ATA:2161-00 Temperature Control Zone System

Fact: P/N: 60B92400-10 Fuel Boost Pump Pressure Switch

Fact: Condition occurred during landing

Facts Help Classify Problems

1. Do not put multiple Facts in a single statement
2. Modify existing solution to add new Facts as needed:

Symptom

Symptoms tell us what problems the customer is having. The conditions or events being observed that suggest or indicate something is discrepant (for example, flight deck effects, pilot reports).

1. Don't create "compound statements" – keep the Facts out of the Symptoms if you can.

Don't

Symptom: Smoke coming out of the engine during landing on 737-200 approaching Singapore

Do:

Fact: Model 737-200

Fact: Condition occurred during landing

Symptom: Smoke coming out of the engine

2. Make the thoughts complete:

Do:

Symptom: No. 2 Engine smoking on startup.

Symptom: 3 inch crack on onboard midflap torque tube

Flight Deck Messages: <exact message text>

Symptom: EICAS: AUTO SPEEDBRAKE

Symptom: CMC:27-18830 GEAR TILT PRESSURE(L)

Ordering Symptoms

If your solution has multiple Symptoms, order them in the solution as follows:

- More detailed first
- Less detailed second

Example of Good Symptom Statements

If a customer reports getting the message EICAS: FIRE CARGO AFT on 747-400 and fire warning bell on:

Fact: Model 747-400

Symptom: EICAS: FIRE CARGO AFT

Symptom: Fire warning bell on

Change

What has changed recently, or what maintenance actions were completed before the anomaly occurred? Not what was changed during the course of troubleshooting.

1. Think about what the customer may have done:

Change: Replaced actuator.

Change: New wiring installed.

2. Changes are not the cause—don't confuse the two.

3. Don't jump to conclusions:

Don't:

Change: The system worked before we installed a faulty processor card.

Do:

Change: Installed a new processor card.

The Root Cause as the key to Solutions

There should be only one cause per solution. If a solution has more than one possible Fix, is it the same problem or is it a similar problem? If it's the same problem, then its cause is identical. In this case, the solution may contain more than one Fix statement—but all Fix statements must be applicable.

If you must decide between applying one Fix statement or another (because only one will work), the solution should be split in two!

1. Share as many common statements as possible among solutions.
2. Add unique statements to differentiate solutions.

HTML Syntax used to link to files/solutions.

linked Primus web site

Linked Solution where xxx is the local prefix and ### is the number of the solution

 Linked Network file

 Rendering an image of a network file (pg, gif, bmp, etc.)

Tables: save table as an 'HTML' file, view in a browser, copy 'source' and paste into role (html)

Fix

Fix statements are the resolution of the problem. They resolve the customer concern, or provide the answer to the question. Author the Fix as a stand alone

- Add Notes within the Fix as needed to improve readability or to identify its applicability.
- If several steps must be performed in order, number the steps.
- Write using present tense.
- If a Solution is long and refers to multiple documents, list them as named references within the Fix and use the named reference numbers within the Fix.
- Make sure these references are also recorded as Facts for the solution.
- Use spaces to format the statement for readability.
- Write everything as a present tense list of commands, as if you were reading them step-by-step to the customer.
- Do not include "if-then" statements in Fixes. This is an indication that you have two separate solutions.

A Great Sample Solution

Goal: Repair heat damaged strut stringer.

Fact: P/N: 65B98746-12 STRUT STRINGER

Fact: Model: 747

Fact: JT9D-7 inboard engines

Symptom: Conductivity readings in excess of 39

Symptom: Heat damaged strut.

Cause: Bleed air valve leak

- Fix: 1. Reinforce the stringer with a nested angle fabricated from 2024-T6, 0.125 min gauge.
2. Fasten with existing fastener locations.
3. Maintain 2D spacing and 1.4D edge margin

STEPS TO CREATING A SOLN.

1. Search for an existing solution, use Matching statements to help. Only create a solution if you can not find an existing one.
2. Open the Create New Solution Frame
3. Add statements, using diverse and appropriate statement roles as described here, but especially multiple symptoms and changes.
 - Be explicit. For example saying 'won't actuate' is unclear - what won't actuate? It is better to say: 'Leading edge flap drive unit won't actuate.'
 - Write using present tense.
 - In a 'fix' don't tell us what you did; tell us what to do in a step by step and complete process.
4. Find matching statements, adding or replacing as applicable. It is very important to reuse existing statements for better search efficiency and higher quality solutions.
5. Optional: add hyperlinks to other solutions or files
6. Check for duplicate solution: Select 'copy to problem description as Current Id'. If a similar or nearly duplicate solution exists, consider consolidating the two into one solution.
7. Be sure to have a meaningful and useful title. (comes from 1st goal, or as defined in 'properties')
8. Check spelling
9. Change default Property values as necessary. Status default is 'draft'. Set Type to either 'systems', 'structures', or 'non-technical'.
10. Save the solution.

Properties - Status

Draft:

This is the default at time of initial creation and for work in progress. A Cause and Fix may or may not have been determined; additional data may be needed to complete the solution.

Review:

Solution contains a Fix (and cause if applicable) and is ready to be reviewed for content standards and technical correctness.

Approved for SE Group: Solution has a Fix And Cause if known, it has been reviewed and has undergone QA and is approved for use by the SE.

Approved for SE: As above, but approved for viewing by SE group SME.

Approved for Boeing:

As above, but approved for viewing by Boeing.

Approved for Customer:

As above but approved for viewing by customers.

Return:

An approved solution requiring updating.

Obsolete:


Retained for background information.

Detailed Criteria for the "Approved" Status levels are provided on our web site under Approval Process, Solution Approval Criteria.

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Things you don't need to say!

Because each Primus application statement is assigned a role, certain phrases are unnecessary when writing statements.

 "I want to, "The customer is trying to"

 "The Customer is using..."

 "The customer is getting..."

FILE . 9 D.

[illegible]

706061 23021660

Title: Reusable Solutions for Aircraft Servicing
Inventor: Norden et al
Serial No.: 09/942,082; filed 8/29/01
Atty. Ref. No.: 7784-000203
Mark D. Elchuk, Harness Dickey & Pierce, (248) 641-1600
11/21

Address <input type="checkbox"/> Y:\Tech Support\Structures\Reusable Soln\FrontEnd\solution.html		Go	
Selected Solution		SOLVES PROBLEM!	
Modify	Delete	Send	Previous Close Next
Solution 1 of 2			
Title: P/N: 65B05133-13, center journal OD=5.730 blend(OD)=0.012 Rc=54.2 FOR TEST ONLY			
Return Solution for Review		Notes Archive Revision History	
ID: bcsrd5664	Searchable: Yes	Domain: bcsr	Author: tjs0677
Status: Review	Solution Class: 4.X	Owner: Melnick	Date Created: 10/03/2000
Modified By: tjs0677		Type: Structures	
Date Modified: 10/03/2000			
Location: None			
Structure Type	Landing Gear/Model 747/WLG/Truck Beam Assy, Complete/Axle/Center Journal		
Model	747		
ATA	3210-10, 3212-30, 3213-30		
Part/Drawing/Number	65B05133-13		
Hardness (Rc)		54.2	
Airplane information V/N None L/N None Registration None Hours None Cycles None MGTW None			
Title P/N: 65B05133-13, center journal OD=5.730 blend(OD)=0.012 Rc=54.2 FOR TEST ONLY			
Attachment	Sheet A		
Detail	OD (1) = 5.730		
Detail	OD (1) Blend depth = 0.012		
Detail	Blend is located at the brake sleeve/truck interface		
Detail	ID (11) = 4.415		
Detail	ID (12) = 4.536		
Boeing Pub	ohm 32-10-22 fig 405 circle 1 OD - design (Cr plated) = 5.7525/5.735		
	ohm 32-10-21 fig 401a circle 1 OD - repair limit = 5.724		
	ohm 32-10-22 fig 405 circle 11 ID - design varies by part number		
	ohm 32-10-21 fig 401a circle 11 ID		
	ohm 32-10-22 fig 405 circle 12 ID - design = 4.520/4.540		
	ohm 32-10-21 fig 401a circle 12 ID		
Boecom Folder 65B05133 JRNL DIM/1,11,12/			
Action File	JAL-NRT-91-5017E		
Boecom Telex	JAL-NRT-91-5087RE		
Fix The ref axle is structurally acceptable for continued use. Nickel fill blends followed by chrome plate back to design OD (0.015 inch max thickness). Continue to process the part per CMM 32-00-05 in Conjunction with OHM 32-10-22			
Done	Local intranet		

48

Address <input type="checkbox"/> Y:\Tech Support\Structures\Reusable Soln\FrontEnd\hs~create.html Go		<input type="checkbox"/> BOEING	
Commercial Aviation Services		BOECOM	
Create New Solution		Notes Archive	
Clipboard Check Spelling		Help Save Cancel	
Location Modify Add BSTA 400 - 420 Modify Add STR 5L - 2R		SE Group Structures	
Structure Type Modify Add Stringer		Solution Status Solution Types	
Part Number Hardness (Rc)		Hours Cycles MTGW	
Model Number None		V/N L/N	
ATA Number Registry		Action File Boecom Folder	
Add: Title Attachment Detail Boecom Folder Action File Boecom Telex Boeing Pub Other References Fix		Other Reference	

☐ BOEING

commercial airplanes

VIEW HOT SOLUTIONS

DESCRIBE THE PROBLEM

VIEW THE SOLUTIONS

ESCALATE THE PROBLEM

CREATE NEW SOLUTION

QUERY THE SOLUTIONS

OPEN ID Go

SET PREFERENCES

NEW SESSION

LOGOUT

HELP

94'

Done

Local intranet

Address ☐ Y:\Tech Support\Structures\Reusable Soln\FrontEnd\search-results.html

Commercial Aviation Services

BOECOM **BOEING**

View the Solutions (20 solutions found) Sort by Solution Relevance View Solution Statements

P/N: 65B05133-2, Center Journal OD=5.720, Blend (OD)=0.0035, Rc=53.7	<input type="checkbox"/>	57%
P/N: 65B05133-2, Center Journal OD=5.724, Blend (OD)=0.020, Rc=54.7	<input type="checkbox"/>	57%
P/N: 65B05133-2, Center Journal OD=5.728, Rc=52	<input type="checkbox"/>	54%
...
P/N: 65B05133-13, Center Journal OD=5.736, Blend (OD)=0.032, Rc=53.4	<input type="checkbox"/>	57%
P/N: 65B05133-23, Center Journal OD=5.732, Rc=55	<input type="checkbox"/>	54%

Refine The Problem Use Query to Limit Search Update Search Help

Location Modify Add

Structure Type Modify Add

Discrepant dimension/condition ☐ Exclusive

Model Number None ☐ V/N ☐ Hours Solution Status ☐ SE Group ☐

ATA Number L/N ☐ Cycles Solution Types ☐ Structures ☐

Boeing Pub None ☐ Registry MTGW

Other References

Done Local intranet

VIEW HOT SOLUTIONS

DESCRIBE THE PROBLEM

VIEW THE SOLUTIONS

ESCALATE THE PROBLEM

CREATE NEW SOLUTION

QUERY THE SOLUTIONS

OPEN ID Go

SET PREFERENCES

NEW SESSION

LOGOUT

HELP

100

X Draft or Incoming Message							
Action File Name:*		Prep Date:		Author:*		Group:*	
FIS-06-DEC-99-D489		06-DEC-99		Rudolph		FIS	
Model:*	ATA:*	Opr:	Base:	Airline Support:*		DEP:*	
737	5770-40						
Subject:				Due Dates:			
Aluminum Spoiler Fitting Spherical Bearing Bore Corrosion				Home Office:		Field:	
Draft Message Number:*		Type:*		Airplane...	Start KB		Notes...
FIS-06-DEC-99-D489		BOECOM					
<div style="text-align: right;">▲</div>							

FIS . 14 A.

102

X Draft or Incoming Message							
Action File Name:*		Prep Date:		Author:*		Group:*	
FIS-06-DEC-99-D489		06-DEC-99		Rudolph		FIS	
Model:*	ATA:*	Opr:	Base:	Airline Support:*		DEP:*	
737	5770-40						
Subject:				Due Dates:			
Aluminum Spoiler Fitting Spherical Bearing Bore Corrosion				Home Office:		Field:	
Draft Message Number:*		Type:*		Airplane...		Get Solution Text	Notes...
FIS-06-DEC-99-D489		BOECOM					
Repair by opening bore up by 0.060 and install a swaged sleeve							
<div style="text-align: right;">▲</div>							

FIS . 14 B.

[View Solution Statements](#)


View the Solutions (1 solution found)

Select a title for the details, if none apply, refine your description below.

Response	Percentage
Doing a good job	79%
Not doing a good job	21%

spherical bearing bore corrosion

ADD: ☒ 737

ADD:  65-67186

ADD: ☒ 5770-40

ADD: ☒ Oversized

ADD: Aluminium spoiler fitting

ADD: spherical bearing bore corrosion

Update Search

ID: (solution not saved)

Refine The Problem

Update your current statements, or add new ones. Click Update Search to search on the revised description.

Quick Refine

Solution Properties

Editor Help

Show Clipboard

ADD: 

137

	Spherical bearing bore
---	------------------------

5770-40
5770-40
5770-40

48'








Selected Solution		SOLVES PROBLEM!
Here is information on your selected solution:		
Modify	Delete	Send Solution 1 of 1 Previous Close Next
Title: spherical bearing bore corrosion		Comments History
		Use as Problem Description
ID: 2.0.34838.2452666	Domain: boeing	Shared: Yes
Owner: administrator	Partition: Unassigned	
Type: repair verification	Status: Technical reviewed	
 Fact	737	
 Fact	65-67186	
 Fact	5770-40	
 Fact	Oversized	
 Fact	Aluminium spoiler fitting	
 Symptom	spherical bearing bore corrosion	
 Fix	Typical repair for this bore - Open the bore up by 0.060 and install a swaged sleeve: previously structurally OK -x opened up to 1.060 max and installed bushing -8 opened to 1.008 -10 opened to 1.006 in this case there were wear marks on the faces/structurally OK for hard anodize Notes: Overhaul manual reference 57-56-61 material 7075-T6 design diameter -4,-9,-10 is 1.000-1.003	

FIG. 1B.

FOOTNOTES

Address <input type="checkbox"/> soldev.cs.boeing.com/demo/explorer.asp		Go	
Comercial Aviation Services		Local intranet	
<p>BOECOM</p> <p>BOEING</p>		<p>SEARCH</p>	
<p>Describe the Problem</p> <p>Type what you know about the problem, and click Search.</p> <p>Issue Type: <input type="text"/> Problem <input type="text"/></p> <p>Select The Model Number:</p> <p>Describe the Task you are trying to perform:</p> <p>Air Conditioning Pack Air Cycle Machine Removals Due to Seizures</p> <p>Part #'s, Model #'s or other Facts:</p> <p>Model: 767</p> <p>Opening: ANZ-AKL-00-00197F</p> <p>Action File: ANZ-AKL-00-00197F</p> <p>Describe the Symptoms of the problem (What characteristics indicate that there is a problem?):</p> <p>Describe any recent Changes that may be associated with the problem:</p> <p>Start a new Primus eServer session</p>			
<p>BOEING</p> <p>commercial airplanes</p> <p>VIEW HOT SOLUTIONS</p> <p>DESCRIBE THE PROBLEM</p> <p>VIEW THE SOLUTIONS</p> <p>ESCALATE THE PROBLEM</p> <p>CREATE NEW SOLUTIONS</p> <p>QUERY THE SOLUTIONS</p> <p>OPEN ID <input type="text"/> Go</p> <p>SET PREFERENCES</p> <p>NEW SESSION</p> <p>LOGOUT</p> <p>HELP</p>			

HIC.17A.

T060047 23044650

Address <input type="text" value="http://soldev.cs.boeing.com/demo/explorer.asp"/>		Go	
Comercial Aviation Services		BOEING	
<p>BOEING</p> <p>commercial airplanes</p> <p>VIEW HOT SOLUTIONS</p> <p>DESCRIBE THE PROBLEM</p> <p>VIEW THE SOLUTIONS</p> <p>ESCALATE THE PROBLEM</p> <p>CREATE NEW SOLUTIONS</p> <p>QUERY THE SOLUTIONS</p> <p>OPEN ID <input type="text"/> Go</p> <p>SET PREFERENCES</p> <p>NEW SESSION</p> <p>LOGOUT</p> <p>HELP</p>		<p>SEARCH</p> <p>Issue Type: <input type="text" value="Problem"/></p> <p>Select The Model Number: <input type="text" value="None"/></p> <p>Describe the Task you are trying to perform:</p> <p>Air Conditioning Pack Air Cycle Machine Removals Due to Seizures</p> <p>Part #'s, Model #'s or other Facts:</p> <p>Model: 767</p> <p>Opening: ANZ-AKL-00-00197F</p> <p>Action File: ANZ-AKL-00-00197F</p> <p>Describe the Symptoms of the problem (What characteristics indicate that there is a problem?):</p> <p>Possible ice formation in ACM during hot and humid conditions</p> <p>Describe any recent Changes that may be associated with the problem:</p> <p>Start a new Primus eServer session</p>	
		Local intranet	

FILED . 17B.

[illegible]

Address <input type="text"/> 59149cad472d618392D11d492db010%2D0000bea6738c&resource=&target=WorkAreaNormalSolution=True&displayID=bcsrd49&unique=9%2F18%2F2000+3%JA22%3A19+PM			
Comercial Aviation Services			
 commercial airplanes VIEW HOT SOLUTIONS DESCRIBE THE PROBLEM VIEW THE SOLUTIONS < ESCALATE THE PROBLEM CREATE NEW SOLUTION QUERY THE SOLUTIONS OPEN ID <input type="text"/> Go SET PREFERENCES NEW SESSION LOGOUT HELP		BOECOM Selected Solution Here is information on your selected solution: Modify Delete Send Solution 1 of 1 Title: Air Conditioning Pack Air Cycle Machine Seizes Show Properties ID: bcsrd49 Searchable: Yes Domain: bcsr Class: 4.X <input checked="" type="radio"/> Goal Air Conditioning Pack Air Cycle Machine Seizes. <input type="radio"/> Fact Model: 767 <input type="radio"/> Fact ATA: 2151-10 <input type="radio"/> Fact Opening: ANZ-AKL-00-00197F <input type="radio"/> Fact Closing: ANZ-AKL-00-00374H <input type="radio"/> Fact Action File: ANZ-AKL-00-00197F <input checked="" type="radio"/> Symptom Air Conditioning Pack Air Cycle Machine Seizes. <input checked="" type="radio"/> Cause The air conditioning system operation could result in ACM failures due to ice formation. <input checked="" type="radio"/> Fix During hot humid operations the pack will remove large amounts of water from the air. Under these environmental conditions, the air conditioning system operation could result in (ACM) failures due to ice formation for the following possible reasons: 1. Clogged water separator drain lines backing the water up into the pack and causing icing. 2. Dirty condenser / Reheater circuit resulting in reduced airflow could create a potential icing condition. 3. Blocked Low Limit Valve (LLV) sense lines resulting in the LLV not recognizing a icing condition. Therefore not opening to provide hot air to melt the ice build up.	
		SOLVES PROBLEM! Previous Close Next Comments History Copy to problem description as New Current ID	
		Export To BOECOM	
Primus eServer		Local intranet	

1970

X View Message

Action File Name: Message Number:

ANZ-AKL-00-00374H 18 MAY 00
ATA 2151-10 MODEL 767
AIR CONDITIONING PACK AIR CYCLE MACHINE REMOVALS DUE TO SEIZURES
REF /A/ ANZ-AKL-00-00197F /C/

In reply to the Ref /A/ message concerning "Air Conditioning Pack Air Cycle Machine Removals due to Seizure", the following is provided:

Anz has reported experiencing an increased number of 767 air conditioning pack Air Cycle Machine (ACM) removals recently due to seizures. ANZ is evaluating these events to determine the reason for the recent ACM seizures.

Action:

1. ANZ asked whether it is acceptable to operate the air conditioning packs on the ground with all cabin zone selectors at full cold during transits using the APU as the air source. Please provide any comments that may assist ANZ in their evaluation of subject ACM seizures.

Response:

Yes it is acceptable to operate the air conditioning packs at any setpoint during ground APU operations.

During hot humid operations the pack will remove large amounts of water from the air. Under these environmental conditions, the air conditioning system operation could result in ACM failures due to ice formation for the following possible reasons:

1. Clogged water separator drain lines backing the water up into the pack and causing icing.
2. Dirty condenser / Reheater circuit resulting in reduced air flow could create a potential icing condition.
3. Blocked Low Limit Valve sense lines resulting in the LLV not recognizing a icing condition. Therefore not opening to provide hot air to melt the ice build up.